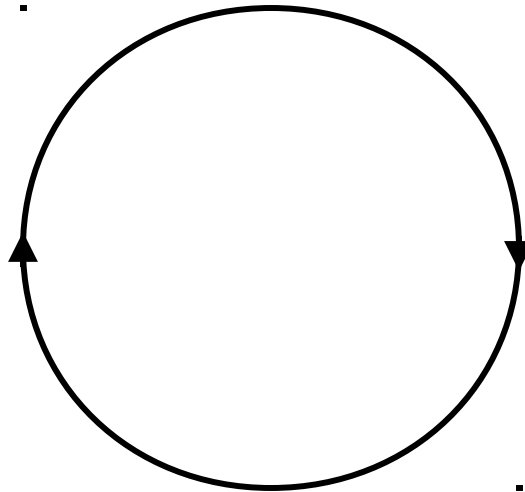# Cultural machines

Michael Mateas

Carnegie Mellon University

Combining meaning and structure
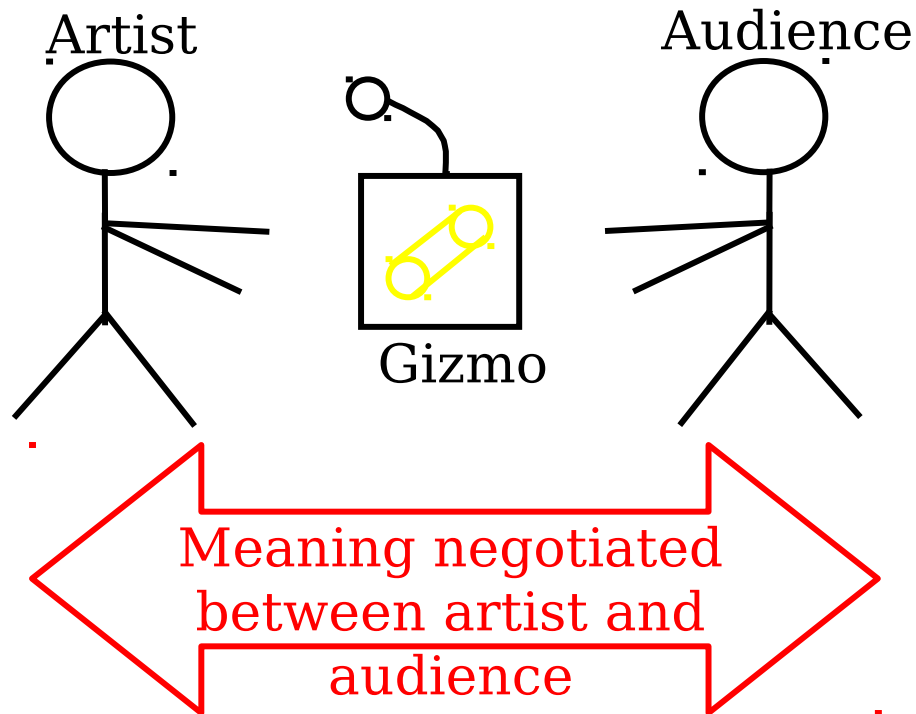
Expressive AI

Artistic practice

Wrestling with meaningful human experiences suggests new system structures...
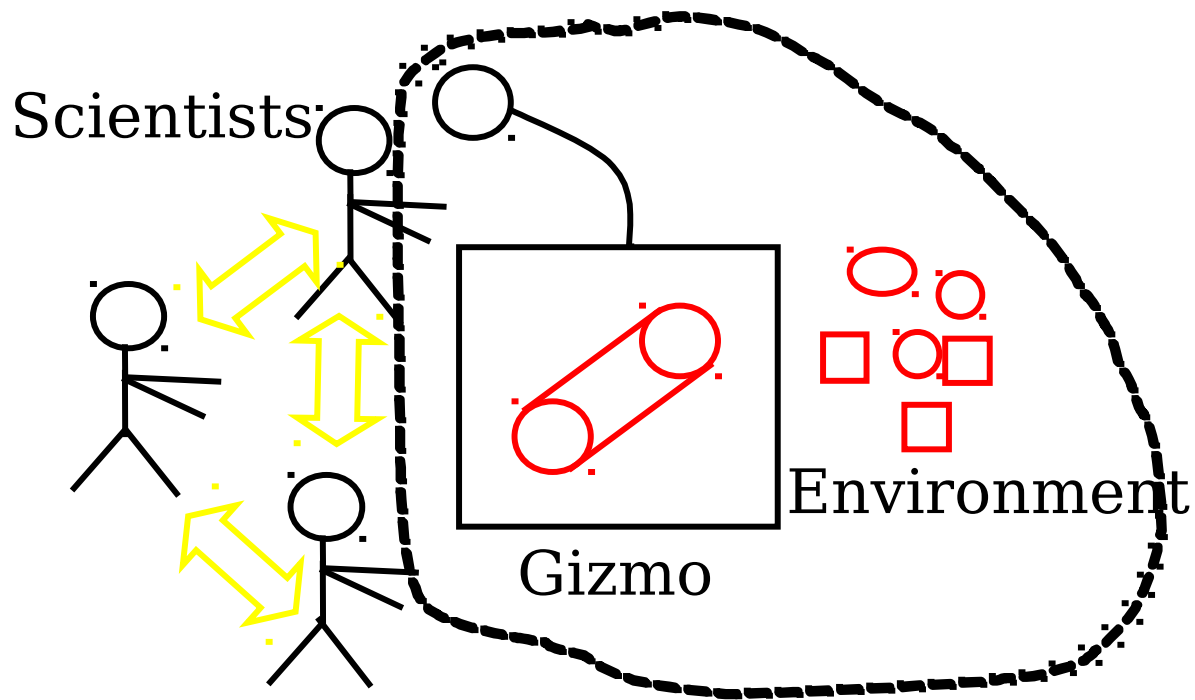
AI research

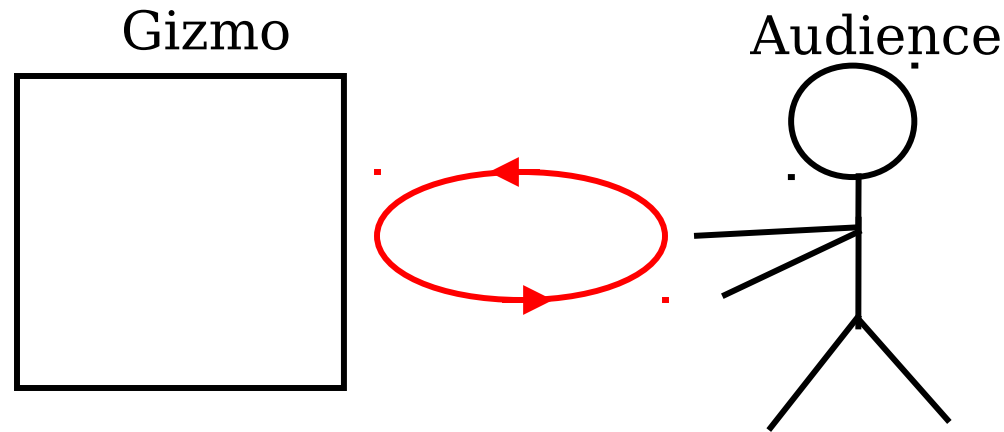Wrestling with the internal structure of the system suggests new audience experiences...

Conversation metaphor (Art)

Artist

Audience

Gizmo

Meaning negotiated between artist and audience

Construction metaphor (AI)

Scientists

Gizmo

Environment

Interpretive affordance

Gizmo   Audience
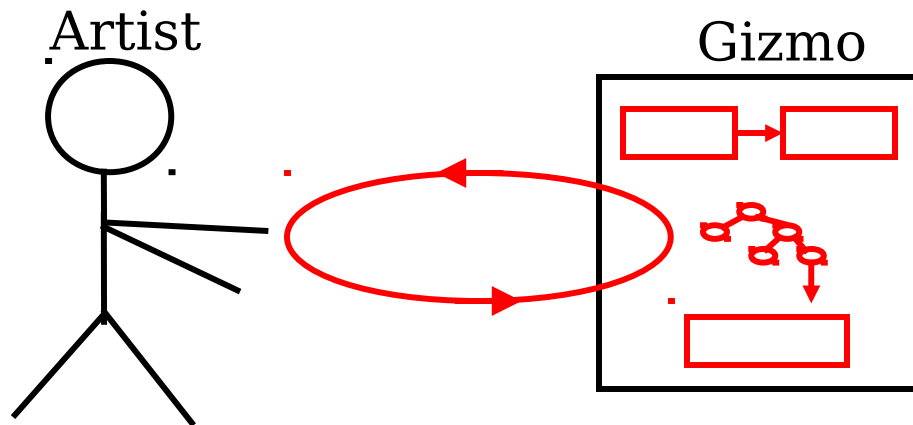
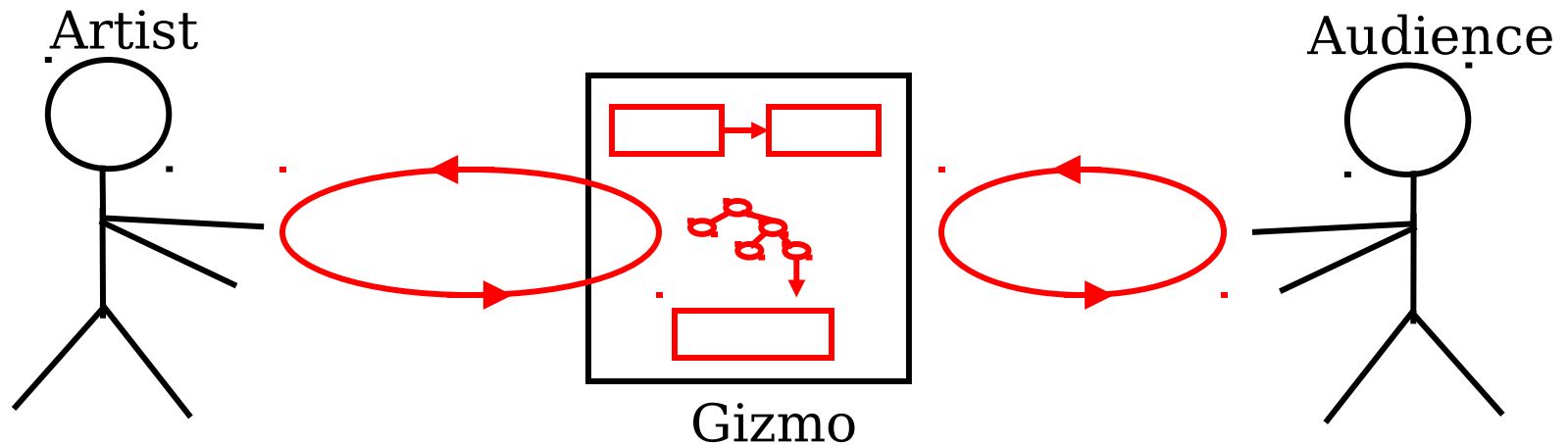- Resources supporting interpretation
  - Narrative affordance: narrating the artwork
  - Intentional affordance: goals for interaction

Authorial affordance

Artist

Gizmo

- Inscription of authorial intention
  - Achieve a fit between architecture and concept
  - Express intent within the architecture

Integrate affordances

Artist

Audience

Gizmo

An architecture is a machine to think with

Office Plant #1

- **Creates a background presence**

- **Sorts incoming email into social and emotional categories**

- **Behavior is a function of the email received**

Collaborator: **Marc Böhlen, Media Studies, SUNY Buffalo**

Audience experience

Office Plant architecture

Email classification (Naïve Bayes and KNN)

Rules add energy to fuzzy cognitive map nodes

If private and chatty add 0.4 to bud

Fuzzy cognitive map selects behavior

Behaviors send motor commands to plant
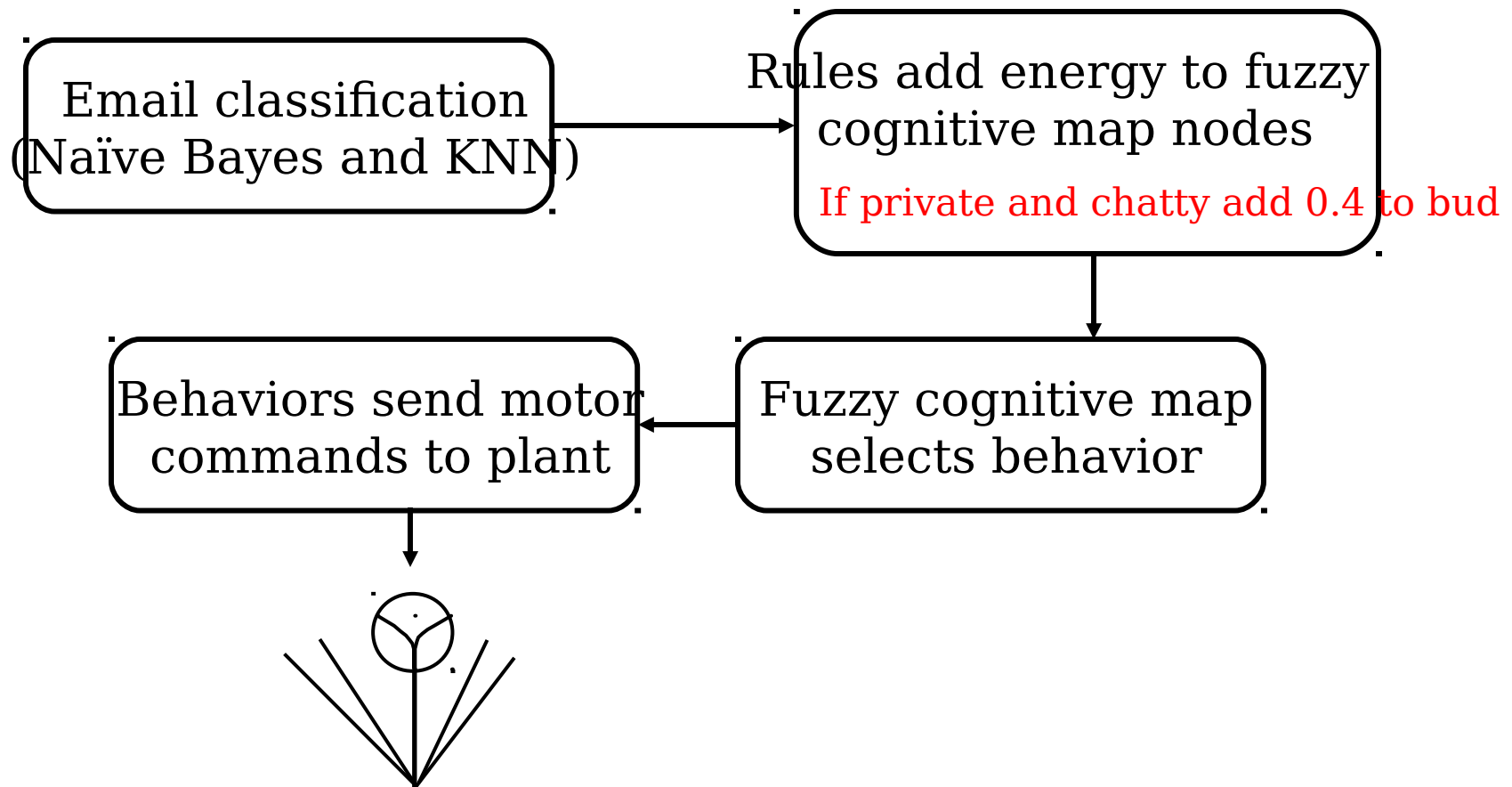
What is an affordance?

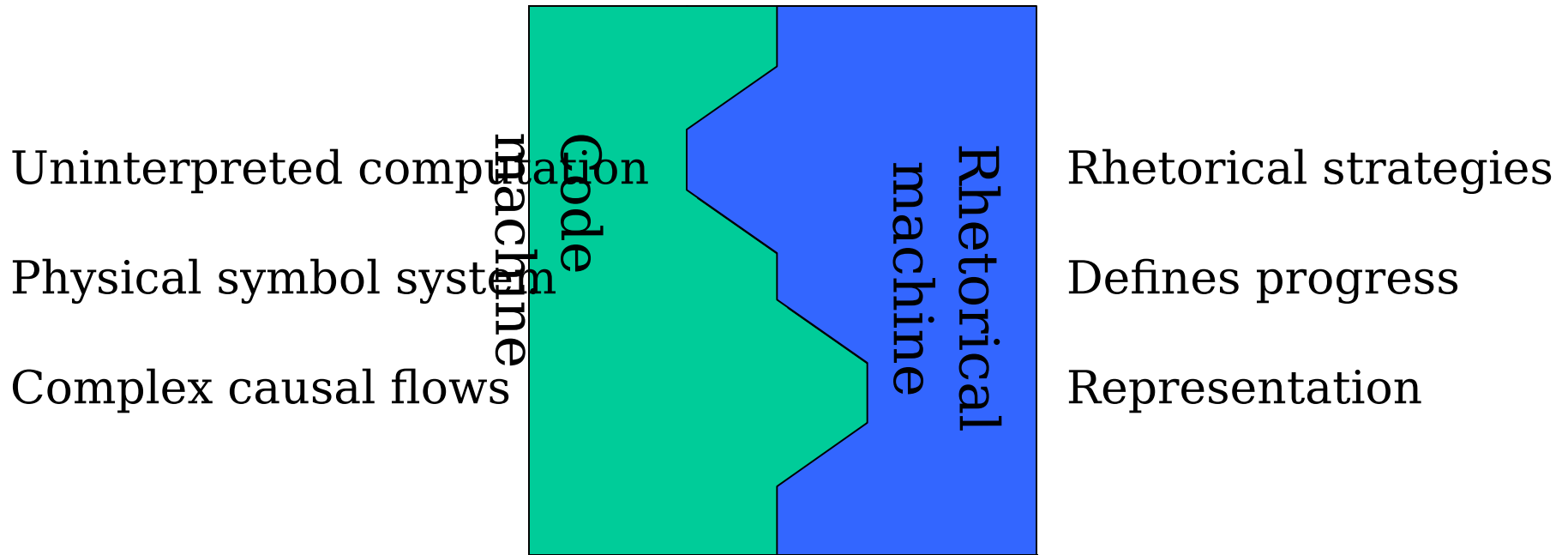**An affordance is a perceived, actionable property of an environment**

- Introduced by James Gibson in the ecological approach to perception
  - *Objective* properties

- Appropriated by Don Norman for discussing design in *The Psychology of Everyday Things*
  - *Perceived, culturally dependent* properties

Computation is always double

Uninterpreted computation   **Code machine**   **Rhetorical machine**   Rhetorical strategies

Physical symbol system   Defines progress

Complex causal flows   Representation

Affordances defined by simultaneous design of the rhetorical and code machine
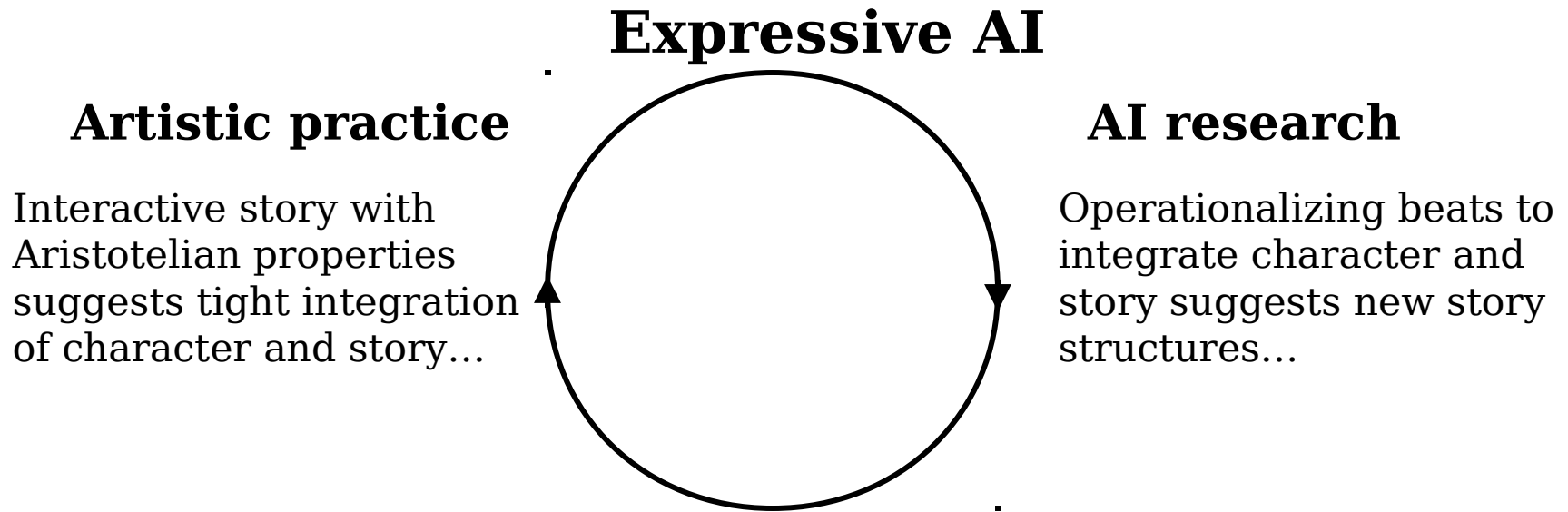
Façade

- **Dramatic world inhabited by computer controlled characters (believable agents)**

- **The user (player) plays a protagonist within the story, first-person point of view**

- **The player experiences a story with a dramatic arc**

Collaborator:Andrew Stern, independent artist and researcher

Example: Façade

Expressive AI

Artistic practice

Interactive story with Aristotelian properties suggests tight integration of character and story…

AI research

Operationalizing beats to integrate character and story suggests new story structures…

Why AI-based art?

Why not database art, or network art or…?

- Both AI and art are concerned with representation
  - AI promiscuously couples with other fields
  - AI not afraid of *meaning*

- AI systems are subjects (inter-semiosis)

- Both AI and art are ways of knowing by making

Plug

Starting January 2003 at Georgia Tech
Literature, Communication and Culture and College of Computing

- Expressive AI research group
  - Interactive story (IF, interactive drama, story generation)
  - Robotic sculpture (perception and action)
  - AI and video games (game studies)
  - AI and cultural theory (critical technical practice)
  - Models of creativity (generative architectures)
  - Believable agents (personality and emotion)